chemia during exercise have increased cardiovascular reactivity to mental stress. Asymptomatic siblings (SIBS, n = 148, 42% male, 29% black, mean age 44.8 years) of people with coronary heart disease prior to age 60 underwent exercise thallium testing and Stroop Color Word testing, with recording of systolic and diastolic blood pressure (SBP, DBP) and heart rate (HR) every minute and continuous recording of ECG by Holter monitor. SIBS with an abnormal exercise ECG or thallium scan had greater maximal increases in SBP (21.5 vs 14.1 mmHg, p = 0.008), DBP (13.4 vs 8.3 mmHg, p = 0.04), and HR (14.6 vs 8.2 beats/min, p = 0.03) during Stroop mental stress than SIBS without exercise ischemia, despite the absence of symptoms. No SIBS had clinical or Holter evidence of ischemia during mental stress.

Multivariate analyses of SBP, DBP, and HR change, controlling for sex, age, race, smoking, a history of hypertension, and baseline blood pressures, found occult ischemia during exercise to be the most significant independent predictor of maximal change in all parameters during mental stress. Multiple logistic regression analysis showed that "hot" responders (top 25% quartile of change) were 12.06 times more likely to have exercise induced occult ischemia than were normal responders, independent of all other variables (C.I.: 3.2–45.2). Thus, SIBS with occult ischemia on the treadmill demonstrated greater reactivity during mental stress. The link between treadmill induced ischemia and mental stress hyper-reactivity may be a tendency for exaggerated vasoconstriction involving both peripheral and coronary artery beds during different types of stress.

4:15

807-2 Is *Chlamydia Pneumoniae* Infection Associated With Acute Cardiac Ischaemic Syndromes?

Peter J. Cook, Gregory Y.H. Lip, John Zarifis, David Honeybourne, Richard Wise, D Gareth Beevers. *University Department of Medicine and Department of Microbiology, City Hospital, Birmingham, England*

Chlamydia pneumoniae is a common infection that has been associated with atherosclerosis. To test the association between *C. pneumoniae* and acute cardiovascular syndromes, we studied the levels of *C. pneumoniae* IgG, IgM and IgA antibodies in 1704 patients (1001 male; 70.1% caucasian, 19.6% Asian and 10.3% Afro-Caribbean) who were acutely admitted with angina (13%, group A), acute myocardial infarction (11.0%, group B) and non-cardiovascular, non-pulmonary disease (76.0%, Controls). Titres indicating acute *C. pneumoniae* infection were defined as as IgG ≥ 512, IgM ≥ 8 or IgG rising × 4 over an average of 83.6 days). Titres indicating chronic infection were IgG of 64–256 or IgA ≥ 8, but IgM < 8 and no rise in IgG. Our results are as follows:

	Group A	Group B	Controls	
age	64.2 ± 10.1	65.7 ± 10.0	56.1 ± 18.2	p = NS
Acute infection	11.3%	14.4%	6.1%*	χ^2 test, *p = 0.005
Chronic infection	27.1%	25.1%	14.1%**	χ^2 test, **p < 0.001

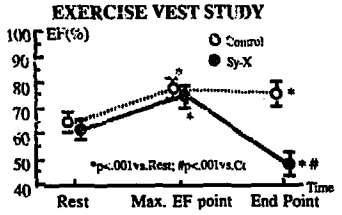
In the control group, there were no significant differences between titres with respect to sex, smoking habit or age. However, serological evidence of acute or previous infection was 17.6% in caucasians, 22.2% in Asians and 32.9% in Afro-Caribbeans; the difference between Afro-Caribbeans and caucasians was significant (χ^2test, p < 0.001) but not that between Asians and caucasians (p = 0.10). This study supports an association between acute or chronic *C. pneumoniae* infection and acute myocardial ischaemia (angina, myocardial infarction). In view of the ethnic differences in infection rates, genetic or environmental determinants of the immune response to *C. pneumoniae* infection may in part contribute to the ethnic differences in cardiovascular disease patterns.

4:30

807-3 Is Syndrome X a Ischemic Heart Disease? Evaluation by Continuous Ventricular Function Monitoring (VEST) and ^{18}Fluorodeoxyglucose Positron Emission CT (PET)

Tatsuhiko Hata, Ryuji Nohara, Ryohei Hosokawa, Masatoshi Fujita, Takashi Kudo, Nagara Tamaki, Junji Konishi, Shigetake Sasayama. *Kyoto University Hospital, Kyoto, Japan*

It remains unclear whether syndrome X (Sy-X) (chest pain with ischemic-like stress ECG despite angiographically normal coronary arteries) is myocardial ischemia due to coronary microvascular dysfunction or not. To clarify this problem, we performed continuous radionuclide function monitoring (VEST), calculating left ventricular end-diastolic volume, end-systolic volume, and ejection fraction (EF) during treadmill exercise in 22 patients with Sy-X (49 ± 9 y.o.) and 12 normal control subjects (Ct) (43 ± 10 y.o.). Each patient underwent ^{18}Fluorodeoxyglucose (FDG) PET scan just after treadmill exercise in fasting condition within 1 week of the VEST study. The results were as follows; Insulin, lipid and glucose data were not different between the 2 groups before exercise.



As the figure shows, Sy-X showed significant EF decrease at the end of exercise compared to the Ct (p < 0.001), which was induced mainly by increased ESV, although EF showed transient increase during exercise. FDG PET showed an abnormally high FDG uptake in all patients with Sy-X (diffuse myocardial uptake, 18; focal uptake, 4), in spite of no myocardial FDG uptake in Ct. This finding provides further support that Sy-X is different from normal patient in terms of glucose metabolism and functional deterioration on peak exercise, suggesting that Sy-X is compatible with microvascular ischemia.

4:45

807-4 Are There Any Differences in Histopathology of Coronary Artery Disease in Diabetics?

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Coronary artery disease in diabetic patients is more severe, occurs earlier and is associated with greater restenosis rate after coronary interventions. To test the hypothesis that histopathology of coronary plaque tissue is different in diabetes we performed quantitative computerized planimetry on coronary specimens obtained by directional coronary atherectomy of 32 lesions of diabetic patients and compared then with 40 lesions of non-diabetic patients. Clinical and demographic data were similar in both groups. All patients presented with unstable angina.

	Diabetes		Non-Diabetes		P
	mm²	%	mm²	%	
Sclerotic	1.95 ± 0.29	56 ± 5	1.46 ± 0.20	36 ± 4	0.04
Thrombus	0.14 ± 0.04	2.4 ± 0.7	0.20 ± 0.05	5.4 ± 0.1	NS
Atheroma	0.36 ± 0.19	8.9 ± 3	0.33 ± 0.14	4.3 ± 1	NS
Hypercellular	0.81 ± 0.23	14 ± 3	1.23 ± 0.22	22 ± 3	0.08
Fibrocellular	0.51 ± 0.11	17 ± 4	1.75 ± 0.32	31 ± 4	0.0001

Conclusions: 1) Compared with non-diabetics, coronary plaque tissue from diabetics have a greater content of sclerotic and a smaller content of fibrocellular tissue. 2) The implications of these results are unclear and require further investigation.

808 Pulmonary Artery Hypertension in Children

Wednesday, March 27, 1996, 4:00 p.m.–5:00 p.m.
Orange County Convention Center, Room 230B

4:00

808-1 Intravascular Ultrasound of Pulmonary Arteries in Children With Pulmonary Hypertension

Dunbar Ivy, Steven Neish, Ole Knudson, Michael Schaffer, James Wiggins, Elizabeth Shaffer, Michael Nihill, Lilliam Valdes-Cruz. *The Children's Hospital, Denver, CO; Baylor University, Houston, TX*

To determine the characteristics of small pulmonary arteries in patients with pulmonary hypertension (PH), we performed intravascular ultrasound (IVUS) in 12 patients with PH (0.3–18 yrs) and 6 patients without PH (5–20 yrs; controls) undergoing cardiac catheterization. Pulmonary artery mean pressures (52 ± 5 vs 16 ± 1 mmHg, p < 0.05) and resistances (10 ± 2 vs 1 ± 1 units*m², p < 0.05) were greater in the PH patients. In patients with resistance ≥ 2 units*m², reactivity to nitric oxide ± oxygen was examined. 33 vessels measuring 2.5–5.0 mm internal diameter were examined with a 3.5 Fr 30 MHz IVUS catheter. Pulmonary wedge angiography was performed in segments of the same lobes as IVUS. Abnormalities of the supernumerary vessels, tapering, blush phase, and reflux were evident by pulmonary wedge angiography in all PH patients. IVUS measurements included: % wall thick-